chase, could not be determined. In the motor cells of the spinal cord of a patient dying of hydrophobia, the nuclei were found to be much shrunken, being nine per cent. smaller than corresponding nuclei in a so-called normal human cord. It is not strange that we should find a greater amount of change in daily fatigue than in artificial stimulation. It is not possible to obtain secretion of a gland or contraction of a muscle by application of electrical stimuli equal to that produced by the normal nerve impulse to gland or muscle. Two plates containing thirteen figures give the entire research at a glance.

The Formation of the Medullary Groove and Some Other Features of Embryonic Development in the Elasmobranchs. WILLIAM A. LOCY. Jour. Morph., Vol. VIII. 1893.

The Optic Vesicles of Elasmobranchs and their Serial Relation to Other Structures on the Cephalic Plate. Ibid., Vol. IX., pp. 115-122. 1894.

Metameric Segmentation in the Medullary Folds and Embryonic Rim. (Prelim. Comm.) Anatomischer Anzeiger, IX., pp. 393-415. 1894.

Locy states at the close of the last paper that he is not ready, as yet, to generalize upon the segmentation of the vertebrate nervous system. However, the facts which he brings together point strongly toward a helpful generalization in the near future. It has come to be quite generally held by morphologists that it is the mesoblast which becomes segmented primarily, and that segmentation of the neural tube is moulded by these bone and muscle somites and accommodates itself to them. Contrary to this view, in embryonic stages much too young to show any trace of mesoblastic somites, Locy finds a perfectly regular, symmetrical and constant segmentation of the neural plate. He has succeeded, in one of the sharks, in tracing out this segmentation in a consecutive and orderly way, and has also succeeded in demonstrating it in early embryos of Amblystoma, Diemyctylus and Torpedo Ocellata. In all Locy finds eleven metameres in the expanded portion of the neural plate which represents the brain. These are distributed to the three primitive cerebral vesicles as follows: six for the third vesicle, two for the second, and three for the first. Later all traces of this segmentation become masked by the development of special structures throughout this entire region. The fact of such a segmentation appearing so early should be given prominence in working out the ancestry of vertebrates. At first all the metameres are alike, which would indicate an ancestral form of this character, *i. e.*, without differentiation in the neural tube. As cephalization advances, differentiation takes place, and it is in this that the primitive segmentation is lost.

This brings us to the first pages of our author. The first structures to make their appearance in the segmented neural plate are the pits which represent the optic vesicles. Just behind these appear a second pair of depressions, the so-called accessory optic vesicles, which give rise later to the pineal gland. Still a third pair of pits may be observed behind the second, but these early become obscured. This series of depressions is taken to represent a multiple eyed condition, common enough in invertebrates, but not known in any vertebrate, and this, too, is of significance in a search after the ancestral form. The arrangement of these optic vesicles in a laterally symmetrical series inclines the author to the view that the eye may be homologized with the sense organs which spring from the lateral line.